CHAPTER 3

CONSTRUCTION MANAGEMENT

LEARNING OBJECTIVES: Identify the techniques used in developing a quality control program for projects; the methods used in tracking project materials and equipment through home port and on deployment; and the importance of maintaining accountability of project money, materials, and equipment. Recognize the need and requirements for jobsite management.

QUALITY CONTROL

The main purpose of the quality control program (see 2ndNCB/3rdNCBINST 4355.1C) is to prevent discrepancies where the quality of the workmanship and the materials fail to match the requirements in the plans and specifications. The responsibility for quality construction rests with the crew leader and the chain of command. The quality control division of the operations department as described in chapter 2 is responsible for conducting tests and inspections to ensure compliance with the plans and specifications. The crew leader must plan quality into the project. Quality planning avoids discrepancies found by the quality control (QC) inspectors while performing their inspections. Each discrepancy identified by the QC inspector represents a failure in the crew leader's QC plan.

ENSURING QUALITY

The crew leader is responsible for developing an aggressive QC plan for each project. An aggressive QC plan guarantees that the quality of the construction meets the standards in the plans and specifications. The development and implementation of a QC plan can be broken down into steps.

Establish Quality Measures

The first step in ensuring quality is to establish the means of measuring QC progress. The crew leader must review the plans and specifications and identify the required quality criteria. For reinforcing steel, the quality criteria would be the size, the placement, the anchoring, and the distance lapped. Quality measures must be specific (for example, the specifications may require that rebar be at least 1 1/2 inches from inside of forming and that rebar must be lapped 24 inches at splices). QC measures are to be listed in "plain language" on the CAS sheet. These measures are then transferred to the QC plan. The crew leader, QC rep, and resident officer-in-charge of construction (ROICC) inspector should agree in advance on how the various tests are to be performed and exactly what the requirements are. For example: If laying asphalt 2 inches thick, how is it to be measured, with a poker device or with a string line and a tape measure? If laying block and the requirement is within 1/4 inch plumb within 10 feet, will this be measured with a string line, level, or some other method? Figures 3-1 and 3-2 are samples of project QC plans.

Select Construction Methods

The second step in ensuring quality is the proper selection of construction methods that are essential to safe, quality construction. Construction methods must be determined very early in the planning stage of the project as they impact on equipment, tools, material, labor, training, and safety requirements. Construction methods selected in the planning stage will also, to a great extent, determine the quality of the finished product. Commonly accepted construction practices have resulted from people doing the same work for many years. They are usually the most effective way to accomplish safe, high-quality work. Use these accepted practices where you have the skills and equipment to do so. Discuss methods with your crew, your chain of command, and the QC inspector if you have any doubts about the value or safety of these practices.

Identify Required Training and Equipment

The crew leader must be aware that many activities require specialized training or qualifications. Some activities, such as welding certifications or cable splicing, may only be satisfied through formal instruction. Formal training for a great many activities is simply impractical. It is frequently necessary to

PROJECT QC PLAN

I. Project Name and Number

II. Project Location

III. Prime Contractor
Sub-Contractors (a)
(b)

IV. Project Scope

V. Type of Testing Required (Soil, Concrete, etc.)

VI. Type of Associated Risk (fire, fumes, noise, etc.)

VII. Special Training Requirements

VIII. Special License Required

IX. Engineering Controls (guard rails, welding curtains, etc.)

X. Testing Equipment Required (state how it is to be used)

XI. Personal Protective Equipment Required for Testing

Project Planner: _____
Print name, rate and company/det

QC Chief: Approved/Disapproved _____
Signature

Reason for disapproval _____
_____

Figure 3-1.—Project QC plan cover sheet.

QUALITY CONTROL PLAN

PROJECT NUMBER_____ PROJECT TITLE_____ DATE_____

ACTIVITY NUMBER	ACTIVITY DESCRIPTION	QUALITY CONTROL REQUIREMENT	SPECIFICATION REFERENCE	REMARKS/RESULTS

Figure 3-2.-QC plan.

identify the skills required and find alternate sources of training. The most common source of informal training is on-the-job training (OJT). Use OJT when you can identify at least one person who knows how to perform the task correctly (yourself, a crew member, a QC rep, or such) and schedule enough time to show the remaining crew the proper technique. Remember that one purpose of projects is to provide training for our people. Teaching your crew the proper methods and techniques should be high on your list of priorities. Besides the required training, required equipment must also be available to accomplish the task according to the method selected. Finishing a large concrete pad without the use of a power trowel (whirly-bird) might prove to be difficult. Renting one with project funds maybe an option if you do not have one at the deployment site.

Ensure Personnel Awareness

Another important step in the implementation of a QC plan is personnel awareness. To perform the work satisfactorily, each crew member must understand what the quality measures are. Before starting work on an activity, all crew members should be briefed about critical measurements, inspection items, potential problems, and each member's responsibility for quality. Remember, **quality is everyone's responsibility.** If you use the crew briefing checklist in figure 2-23 of chapter 2, all these items will be addressed.

Evaluate Completed Work

The last major step in QC plan development is the daily QC inspection report. This daily report is required for all projects. The purpose of this report is to document the completion of all required checks, tests, and inspections. All work completed or in progress either is or is not according to the specifications. The daily report is signed by both the QC inspector and the crew leader and forwarded to the operations officer or detail OIC with a copy to the ROICC office, the company commander, and the crew

leader. Figure 3-3 is a form for the daily QC report. All checks, tests, and inspections are listed on the back of the CAS sheet. Everyone on the crew should know in advance what the inspections will consist of and what the end results are.

ROICC INTERFACE

The ROICC is responsible for inspection and surveillance of ongoing NCF projects. The ROICC is also responsible for reviewing daily QC reports to ensure compliance with the plans and specifications. The ROICC office also has to approve any battalion recommended field changes or customer requested changes. Scope changes require the approval of the customer's major claimant. Any changes that require 50 or more man-days of additional direct labor or increase the cost of the project by $500 or more require approval of 2ndNCB/3rdNCB. The ROICC also conducts the final inspection and accepts only those facilities built according to the plans and specifications. The QC staff provides direct liaison between the battalion and the ROICC on all matters, such as change requests and project specification questions. No field changes can be made without a request being forwarded through the QC staff and being approved in writing by the ROICC. Change requests must include the same level of detail as the original specification. The engineering division can provide assistance on sketches for your change requests. Figure 3-4 is a sample design change request. A log of all design change requests in a format similar to figure 3-5 must be kept in folder 6 of the project package.

PRECONSTRUCTION CONFERENCES

Before starting work on any project, the battalion must hold a preconstruction conference (precon) with the ROICC or his or her designated representative. The purpose of this meeting is to discuss the scope of the project, construction schedule, utility requirements, QC plan, and any other items that may affect the project. The OPs/QC staff will head these meetings from the battalion side and will keep the minutes of the meeting. Figures 3-6, 3-7, and 3-8 are sample forms for minutes of a precon.

RED-LINE DRAWINGS

The crew leader is responsible for maintaining a set of drawings on the project site that have any field changes marked in red. These "red-line drawings" must be updated every 2 weeks by entering all changes and comparing with the drawings held in the operations department. At the end of the deployment or at project completion, the red-line drawings will be turned over to the engineering division. Engineering will reflect all of the changes on two sets of drawings which will be provided to the ROICC as "as-built" drawings with the project completion letter.

MATERIAL TESTING AND INSPECTION

Any material tests required by specification will be performed by the engineering division. The crew leader should include these tests in the QC plan and coordinate time schedules with engineering. Figure 3-9 is an engineering service request (ESR) form. Inspection of the materials to ensure compliance with the plans and specifications is also the crew leader's responsibility. These inspections must be done when the materials are received in the material liaison office (MLO). They will be inspected again 30 days prior to use to be sure that the shelf life has not expired, storage damage has not occurred, and the material is still usable. These inspections can be done by the company expediter, but the crew leader is still the one responsible for seeing that they are done and done correctly. The QC inspector will inspect the materials again as they are brought to the jobsite.

OTHER QC FORMS

Besides the normal design change requests, precon summaries, and engineering service requests, there are other QC forms. For example, rebar bending schedules, concrete forming plans, and clearance forms need to be prepared by the crew leader during the home port planning process. The engineering division may assist in preparing shop drawings that make details clearer and provide a ready reference for field use. A "hard-card" is a checklist to be completed before the placement of concrete or asphalt. The hard-card ensures the site of the placement has been adequately prepared. Figures 3-10 and 3-11 are forms for concrete and asphalt hard-cards. These forms are to be completed 24 hours before placement of materials. Figure 3-12 is a site visit checklist for use on predeployment trips. Figure 3-13 is a utility interruption request.

MATERIAL MANAGEMENT

As a CB/PO1, material management and accountability is **YOUR** responsibility. MLO is merely a means by which to buy materials for your job. All tools and materials are tied to master activities and identified

DAILY QUALITY CONTROL INSPECTOR'S REPORT

Route to:	Initial	Date	Remarks
S3			
S3C			
S3QC			
00S			
Prime			
Sub			

Date	Time	Project No.	Report No.
Prime Co.		Project Title	
Sub Co.		Weather	
Supervisor		Inspector	

Activity	Rate	Description of Work Performed

Activities started	Activities Completed

Construction Inspection Plan Items Checked	Results

Delays	Safety hazards present

Remarks

Material Received

Certify all work performed this date is IAW plans and specifications

Project Supervisor QC Inspector Reviewed (S3QC)

Dist:
1. ROICC
2. QC File via S3
3. Prime Contractor

Figure 3-3.—Daily QC inspector's report.

FIELD ADJUSTMENT REQUEST/ DESIGN CHANGE DIRECTIVE

FAR/DCD # _____
Page ____ of _____
Date _____

Project Number: _____

Project Title: _____

Requested by: _____

Description of and reason for request: (include drawings and sheet numbers and attach drawings as necessary for description)

Estimated additional cost:

Estimated additional mandays:

Approved/disapproved	Prime Contractor _____	Date _____
Approved/disapproved	Quality Control _____	Date _____
Approved/disapproved	Engineering _____	Date _____
Approved/disapproved	Operations _____	Date _____
Approved/disapproved	ROICC _____	Date _____

As Built _____ Date _____
(initial)

Notes: 1. Route original and 3 copies through to ROICC
2. ROICC return original and 2 copies

Figure 3-4.—Design change request.

FIELD ADJUSTMENT REQUEST (FAR)/DESIGN CHANGE DIRECTIVE (DCD) SUBMITTAL LOG

FAR #	Description	Spec Section	Drawing Number	Date to Ops	Date Returned	Approved/ Disapproved

Figure 3-5.-Field adjustment request submittal log.

Date_____

PRECONSTRUCTION CONFERENCE SUMMARY

PROJECT:_____

1. ROICC Project Manager:_____
   ROICC Inspector:_____

2. Public Works Representative:_____
   Customer Representative:_____

3. NMCB Point of Contact:_____
   NMCB Prime Contractor:_____
   NMCB Project Officer:_____
   NMCB Project Crew leader:_____
   NMCB QC Representative:_____

4. Point of Contact after normal working hours:
   Customer:_____
   ROICC:_____
   NMCB:_____

5. Point of Contact during working hours:
   Customer: _____
   ROICC: _____
   NMCB: _____

6. Planned start/completion dates: _____
   Known interruptions: _____

7. Outstanding question regarding plans and specs or execution of work:

_____

_____

_____

_____

_____

_____

_____

Figure 3-6.-Preconstruction conference summary, page 1 of 3.

8. Customer initiated changes to the scope of work are to be directed to the ROICC. Customer initiated changes must be via field adjustment requests and approved by the ROICC prior to execution. Approved field adjustment requests are the only authorized means of creating changes to the plans and/or specifications. Battalion engineering is responsible for updating plans and/or specifications upon receipt of approved field adjustment requests.

9. Have field conditions been verified? Yes_____ No_____ N/A_____
Any unusual conditions? _____

10. Have all permits been acquired? Yes_____ No_____ N/A_____
A. Site Approval Yes_____ No_____ N/A_____
B. Excavation Permit? Yes_____ No_____ N/A_____
C. Tree Removal? Yes_____ No_____ N/A_____

11. What operation and maintenance manuals have been or are to be provided to the customer? _____

12. What are the project submittal/report requirements? _____

13. Safety Plan to ROICC Provided_____ To be provided_____
Special Safety Concerns _____

14. Quality Control Plan to ROICC Provided_____ To be provided_____
Special Quality Control Concerns _____

15. Materials to be customer supplied: _____

16. Project tools and equipment to be provide to the customer upon project completion:

17. Is non-organic technical assistance required, and if so what arrangements have been made? _____

18. Will this project be affected by priorities of other projects/functions? _____

Figure 3-7.—Preconstruction conference summary, page 2 of 3.

19. What is the schedule for required utility outages? _____

20. What arrangements been made for connection of new utilities to existing service?

21. What provisions have been made for temporary utilities service? _____

22. What security clearances, if any, are required for construction site? _____

23. What off site prefabrication is scheduled and where is the prefab yard located?

24. What environmental protection is required? _____

25. Other comments/remarks: _____

_____ _____

ROICC Representative/Date Operations Officer/Date

Figure 3-8.-Preconstruction conference summary, page 3 of 3.

ENGINEERING SERVICE REQUEST

PART I (To be completed by requestor)

From:_____ Phone:_____ Date:_____

To: Engineering Division

Subj: ENGINEERING SERVICE REQUEST

1. It is requested that the following service(s) be provided:
   ( ) surveying ( ) drafting ( ) reproduction ( ) other

2. Date needed:_____

3. Description of work: (include sketch, location, size, job no., etc.)

_____

Requestor's signature

PART II (To be completed by Engineering Division)

Date request received_____ Priority assigned_____
Approved/disapproved_____ Completed by _____
Date work started_____ Manhours exp._____
Date work completed_____

Original - File
Copy - Requestor upon completion of work
Copy - To section performing work

ESR # _____

Figure 3-9.—Engineering service request.

CONCRETE PLACEMENT CLEARANCE FORM

PART I

Date _____

Project Number _____ Title _____ Location _____

Date/time Desired _____ QTY _____ Strength (PSI) _____

Slump (in.) _____ Max Aggregate Size _____ Admixtures _____

Type of Placement ( ) Roof ( ) Slab ( ) Wall ( ) Other

Finish Required (type): Tolerance ( ) ± 1/4 in. ( ) Other

PART II

Item	Conforms to Requirements N/A	Crew-leader	QC Insp
Subgrade Prep			
Elevation			
Dimension			
Compaction			
Capillary Barr (sand)			
Vapor Barrier			
Misc. (insec, Drain rack, etc.)			
Forms			
Elevation			
Dimensions			
Alignment			
Bracing			
Condition			
Keyways			
Water Stop			
Embedded Items			
Anchor Bolts			
Sleeves			
Misc.			
Reinforcing			
Size			
Location and Spacing			
Chairs (meshups)			
Bracing			

Item	Conforms to Requirements N/A	Crew Idr	QC Insp
Electrical			
Conduit inst/stubbed up			
Sleeves (foundations)			
Pull Cords			
Mechanical			
Sleeves (foundations)			
Sub slab piping			
- pressure tested			
Floor Drains (elevation & location)			
Floor Cleanouts (elevation & location)			
Stubups (location, type)			
Placing/Finishing Equipment			
Screed Boards Set			
Screed Boards Checked			
Placing Tools Set			
Placing Tools Checked			
Finishing Tools Set			
Finishing Tools Checked			
Curing Materials			
Testing Materials (cylinders, slump cone, etc.) arranged for or on site)			

Submitted: _____ Crewleader _____ Date

Approved: _____ QC Inspector _____ Date

Scheduled For: _____

Remarks

Figure 3-10.-Concrete placement clearance form.

ASPHALT PLACEMENT CLEARANCE FORM

Project Title: Area Covered:

Part I Subgrade Prep	N/A	Crewleader	QC Insp
Materials (specs)			
Compaction			
Misc.			
Part II Base Course			
Materials (specs)			
Compaction			
Embedded Structures			
Blue Top Elevation			
Misc.			
Part III Asphalt Prime			
Type (specs)			
Rate of Application			
Application Temperature			
Cure			
Edge Preparation			
Other			
Part IV Asphalt Mix Requirements			
Design			
Extraction Tests			
Marshall Stability			
Placement Temp			
Part V Equipment (onsite/good cond.)			
Spreader			
Breakdown Roller			
Intermediate Roller			
Finish Roller			
Hand Tools (rakes, shovels, etc.)			
Cleanup Equip			
Barricades or other Traffic Control			
Other (specify)			

Part VI Order

Spec: Quantity: Date of Delivery:

Submitted by: _____ Approved by: _____

Crew leader QC Inspector

Figure 3-11.—Asphalt placement clearance form.

PREDEPLOYMENT SITE VISIT SUMMARY

Project: _____ Number: _____
Site Visit Conducted by: _____ Date: _____

1. Status of Project: New Start _____ Turnover _____ Multiple Turnover _____

If a turnover project:

List any differences between observed and reported status: _____

Obtained copy of onsite battalion's project package? Yes ____ No ____
Obtained copies of management tools now in use? Yes ____ No ____
Obtained status of required project submittals? Yes ____ No ____
Is project to be worked during turnover? Yes ____ No ____
Will all project material be returned to MLO for turnover? Yes ____ No ____
Which items won't be returned? _____

2. Obtained copies of following missing documents:

Project Plans: Yes _____ No _____ Not missing _____
Project Specifications: Yes _____ No _____ Not missing _____
Project Bill of Materials: Yes _____ No _____ Not missing _____

3. Obtained copies of local forms, instructions and required procedures? Yes ____ No ____

4. Are the following permits required for construction?

Excavation permit? Yes _____ No _____
Utility Outage permit? Yes _____ No _____
Burning permit? Yes _____ No _____
Hauling permit? Yes _____ No _____
Other permits? _____

5. Percentage of materials on hand: Conus _____ Local _____

Estimated percentage at turnover: Conus _____ Local _____

6. What special skills are required? _____

7. Who is responsible for installation of collateral equipment? _____

8. What level of security clearance is required for access to jobsite? _____

Who is the point of contact for clearances/access? _____

What is the expected delay entering and departing site? _____

9. ROICC: _____ Phone: _____

Chief Inspector: _____ Phone: _____

10. Photographs/sketches taken of site? Yes _____ No _____

11. Other comments: _____

Figure 3-12.—Predeployment site visit summary.

Date:

From: Naval Mobile Construction Battalion
To: Public Works Officer

Subj: UTILITY INTERRUPTION REQUEST

1. Request authorization for a scheduled utility interruption involving the following utilities:

____ Electric	____ Water
____ Steam	____ Sewerage
____ Communications	____ Other

2. Location: _____

3. Planned start date/time: _____

4. Planned completion date/time: _____

5. The interruption is for project _____ and is required to: _____

_____

6. Point of contact: _____ phone no. _____

_____
Signature/printed name of requestor

INTERNAL PUBLIC WORKS ROUTING

Code	Work Center	Approve/ Disapprove	Signature	Date	Remarks
____	Line Crew	_____	_____	____	_____
____	Water Crew	_____	_____	____	_____
____	Engineering	_____	_____	____	_____
____	_____	_____	_____	____	_____

PUBLIC WORKS DEPARTMENT ENDORSEMENT

From: Public Works Department
To: Naval Mobile Construction Battalion

1. Returned APPROVED/DISAPPROVED

_____
Signature/printed name of approving official

Figure 3-13.—Utility interruption request.

on CAS sheets. This section of the chapter will cover the procedures used to identify those "hard-to-get" materials, the techniques used to track them through home port and on deployment, and how to maintain accountability of your money and materials.

HOME PORT RESPONSIBILITIES

Home port is the time to plan your projects and identify what resources it will take to complete them. The first two things to learn is where your materials will come from and who is going to pay the bill. To minimize cost, most of your project materials will come from the Continental United States (CONUS). Most materials ordered on the deployment site are bulk items like cement, concrete, aggregate, sand, CMU block and such. Bulk items are too expensive to ship. It is the goal of 2ndNCB/3rdNCB to have 100 percent of your critical path materials on site at project start. It is your responsibility to be sure they know exactly what these critical path materials are and when you need them.

Bills of Material (BM)

After plains and specifications for your project are drawn up, bills of material are generated by either the 20th or 31st NCR planning and estimating staff. You will receive copies of these BMs about 5 months before you deploy. These BMs must include <u>everything you need</u> to complete your project! These BMs usually include construction materials, plans and specifications, special tools, and safety gear not already in the battalion's table of allowance (TOA). Any technical assistance you may require, such as balancing an HVAC system or certifying a fire alarm system, also should be listed in the BM. Not only do you have to ensure the regimental staff identified the right tools and materials, but you also have to ensure they identified the right quantity. Figure 3-14 is an example of a BM.

BMs are arranged by material type—structural, electrical, mechanical, or such. Your <u>number one</u> job in home port is to make sure the BMs contain all the material you need to complete your job!

Material Take-off (MTO)

The most important phase of project planning to help you identify materials is the material take-off. You must generate a material list completely independent of the BM. This is a critical step, because it is a check-and-balance against the regiment's planning and

BM

BILL OF MATERIAL

PROJECT		AUTHORITY/ORIGINATOR	BM NO.	SECTION
TWI-025	ADMINISTRATION BLDG	31st NCR	GER-110	STRUCT

RID	MAS	SERV & REQNR	DEM	SERV & SUPP ADD	SIG	FUND	OBS	PRJ	PRJ	JON	ROS	ACCOUNTING DATA
4-6	7	30-35	44	45-50	31	32-33	34	37-39	60-61	62-64	72-77	
P96	3	N66450	R	N62604	A	BC	W	OOH	66	309	OHC104	

DOC ID	COG	NSN	UNIT OF ISSUE	QTY	DOCUMENT NUMBER	ADV	L/I	DESCRIPTION/VENDOR SOURCE INTENDED USE	UNIT PRICE	TOTAL PRICE
1-3	33-36	8-20	23-24	25-29	36-43	65-66				
AOB		5510-00-220-6146	BF	6508	0214-1744		1	LUMBER 2" X 4" X 12"	.32	2082.56
AOB		5510-00-220-6196	BF	420	0214-1745		2	LUMBER 2" X 6" X 12"	.32	134.40
AOA		5315-00-010-4663	BX	3	0214-1746.		3	NAIL 16d COMMON 50 LB BOX	16.86	50.58
AOA		5640-00-847-0235	BD	90	0214-1747		4	WALLBOARD 5/8 X 4" X 8'	12.50	1125.00
AOA		5315-00-753-3890	PG	2	0214-1748		5	NAIL FINISHING 6d	2.15	4.30
AOA		5315-11-100-0139	BX	5	0214-1749		6	HILTI NAILS 2 7/8"	21.20	106.00
AOA		1377-11-100-0464	BX	8	0214-1750		7	HILTI CHARGES PURPLE	19.40	155.20
AOA		5640-00-634-8891	RO	8	0214-1751		8	TAPE, WALLBOARD 250' ROLL	1.40	11.20

Figure 3-14.-Bill of material.

BM/MTO COMPARISON WORKSHEET

Activity No.	Material Description	U/I	BMLI No.	BM QTY	MTO QTY	Diff.	Remarks
332015	LUMBER 2" X 4" X 12'	BF	GER-110-1	6508	6850	-342	STRUCTURAL INTERIOR WALLS
332015	LUMBER 2" X 6" X 12'	BF	GER-110-2	420	420	0	STRUCTURAL INTERIOR WALLS
332015	NAILS 16d COMMON	BX	GER-110-3	3	4	-1	STRUCTURAL INTERIOR WALLS
332015	WALLBOARD 5/8 X 4' X 8'	BD	GER-110-4	90	75	15	STRUCTURAL INTERIOR WALLS

Figure 3-15.—BM/MTO comparison worksheet.

estimating staff. After all, who knows your job better than you? Once the MTO is generated, list materials by material type and compare it to the BM. If the BM does not list your material, you must order it. If they do not give you enough, you must get more. And if they gave you too much, you must cancel the extra. The following example should help make this concept clearer.

During your project planning you identified the following materials needed to complete the job:

– 6,850 board feet (BF) of 12 foot 2x4s

– 420 BF of 12 foot 2x6s

– Four 50 lb boxes (BX) of 16 penny nails

– 75 pieces of 5/8 x 4x8 wallboard

Now go back to figure 3-14 and see how much the BM gave you. Using a BM/MTO comparison worksheet (fig. 3-15) you can make this comparison.

We just took one activity and compared what we think we need to what the NCR thinks we need. Did you find all those on the BM? The bill of material line item (BMLI) is the BM number taken from the upper right-hand corner of the BM (GER-110) and the line item number of your material. We found the BM shortchanged us 342 board feet of 2x4s and 1 box of nails. They did give us 15 extra pieces of wallboard. Now it is time to correct these oversights.

BM Add-Ons

Add-ons and reorders are two commonly misunderstood terms. A **reorder** is used to order an already existing BMLI. An **add-on** is used to order a completely new line item not found on the BM. Reorders use the same BMLI number. Add-ons use a new item number. The easiest way to remember the difference between the two tools is, if your material was lost or damaged in shipment, reorder it. If you just need more, do an add-on. You are the person who makes this step happen. Now that the problems are identified, use the flowchart in figure 3-16 to do the paper work.

The first step is to do add-ons for the material you are short. Figure 3-17 has the blanks filled in for the material not sent but still needed.

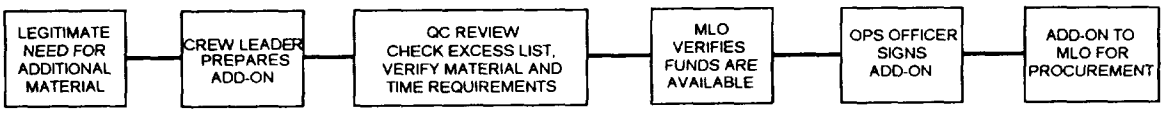

Figure 3-16.—Flowchart for add-ons.

Project Number: TWI-025	Project Title: Administration Building		Date: 23 Nov 90	MLO USE ONLY		
BM Number: GER-110	Master Activity Number: 15	Dwg. No.: 724387	Prepared By: CE2 S. L. Olson			
BM Item No.	Unit of Issue	Qty	Description	Justification	Unit Price	Total Price	Requisition Number
9	BF	342	Lumber 2" x 4" x 12'	Required to meet MTO qty			
10	BX	1	Nail 16d Common	Required to meet MTO qty			

Figure 3-17.-Add-on BM.

Notice these additional items are labelled line items 9 and 10. With add-ons you must go to the last line item and create new line items for the material you need. MLO will help you with this step. There is no fancy form to cancel the extra 15 sheets of wallboard, but you must inform MLO you do not need them so they can do their paper work. **Remember: Add-ons cost money!**

Tracking Your Material

Once your material is ordered from the states the only way you can track it is with the **project status report (PSR)** if you deploy to an Atlantic site, or the **project control report (PCR)** if you deploy to a Pacific site. The PSR/PCR tells you the current status of your materials and is generated by the NCR. Twice a month the battalion receives a PSR/PCR showing outstanding requisitions. Once a month the battalion receives a PSR/PCR showing the status of all project materials. After you have corrected the BMs, you now have to make sure your materials get to your site. Figure 3-18 is a PCR for your materials.

The PCR is listed by BMLI number. Look at the original order of 2x6 lumber and nails and at when the add-ons were approved (listed as line items 9 and 10). Be sure the quantities on the PCR match the quantities on the BM. The final step is to identify what materials you need to complete your first 45 days of construction. Two months before deployment, your operations officer will send a letter like the one in figure 3-19 to the NCR listing these identified materials.

Money Management

Money management is another area under your control. When a project comes on line, the original estimated amount of money is given by the customer to 2ndNCB/3rdNCB. The bulk of this money is given to the NCR to purchase CONUS material. A smaller pot of money goes to the main body and detachments to buy materials locally. Money for local purchases is held by station fiscal departments and tracked by MLO. Every month the MLO officer completes an estimate at completion (EAC) report. The MLO uses EAC reports to track money spent on locally procured materials and to give a projected final cost estimate of the project. Every time you submit an add-on, the final project cost (EAC) increases. Requests for additional funding are **ONE TIME ONLY.** A second request is considered poor management, so be sure your material estimates

PROJECT CONTROL REPORT

FACSO RPT SYM/NO 04421/B57AMR07 15 FEB 91

CONTROL	LI	REQUISITION	PROJ PRI	RDD	ROS	EOS	DESCRIPTION	UI	QTY REQ	LATEST STATUS	DATE RCRD/ FLAGS	ESD	S/S QTY	UI	M	POE	DATE SHIP
GER110	1	R6645002141746	ZD4 06	1100	0360	0000	LUMBER 2X4X12	BF	6508	AS1 RR625836973215XX	1035	0355	6508	BF	Z	3GA	1003
GER110	2	R6645002141747	ZD4 06	1100	0360	0000	LUMBER 2X6X12	BF	420	AS1 RR625836973216XX	1035	0355	420	BF	Z	3GA	1003
GER110	3	R6645002141748	ZD4 06	1100	0360	0000	NAIL 16D CMN	BX	3	AS1 RR625836973217XX	1035	0355	3	BX	Z	3GA	1003
GER110	4	R6645002141749	ZD4 06	1100	0360	0000	WALLBOARD	BD	90	AS1 RR625836973218XX	1035	0355	90	BD	Z	3GA	1003
GER110	5	R6645002141750	ZD4 06	1100	0360	0000	NAIL FIN 6D	PG	2	AS1 RR625836973219XX	1035	0355	2	PG	Z	3GA	1003
GER110	6	R6645002141751	ZD4 06	1100	0360	0000	HILTI NAILS	BX	5	AS1 RR625836973220XX	1035	0355	5	BX	Z	3GA	1003
GER110	7	R6645002141752	ZD4 06	1100	0360	0000	HILTI CGS PRPL	BX	8	AS1 RR625836973221XX	1035	0355	8	BX	Z	3GA	1003
GER110	8	R6645002141753	ZD4 06	1100	0360	0000	TAPE, WALLBD	RO	8	AS1 RR625836973215XX	1035	0355	8	RO	Z	3GA	1003
GER110	9	R6645002571246	ZD4 06	1100	0360	0000	LUMBER 2X4X12	BF	342	AS1 RR625836973215XX	1035	0355	342	BF	Z	3GA	1003
GER110	10	R6645002571247	ZD4 06	1100	0360	0000	NAIL 16D CMN	BX	1	AS1 RR625836973216XX	1035	0355	1	BX	Z	3GA	1003

KEY

Control = BM No.
PROJ/PRI = MILSTRIP Project code/Priority Code
RDD = Required Delivery Date
ROS = Required On Site Date
S/S QTY = Status/Shipped Quantity
POE = Port of Embarkation
Latest Status = Supply Status
Date-RCRD = Date Status was Recorded
Flag = Critical flag
ESD = Estimated Shipping Date
M = Mode of Shipment
Date Ship = Date Shipped

Figure 3-18.-Project control report.

BATTALION LETTERHEAD

From: Operations Officer, Naval Mobile Construction Battalion _____
To: Project Support Officer, _____ Naval Construction Regiment

Subj: FIRST 45-DAY MATERIAL LIST

1. The following materials for project _____ are required on site to support construction within the first 45-days of the upcoming deployment. These materials are not onsite according to your latest Project Control Report/Project Status Report.

BM No.	Line Item	Description	Qty Req'd first 45-days

2. Request you ensure the identified materials are on site prior to main body arrival.

Respectfully,

LCDR, CEC, USN

Figure 3-19.—First 45-day material list.

are accurate. Figure 3-20 is what a completed EAC report looks like.

Remember, the EAC is only for tracking materials bought locally. Every time you put in an add-on your EAC goes up and the money left to complete your project goes down!

DEPLOYMENT RESPONSIBILITIES

Home port is through and you are ready to start your project! How successful your home port planning was will now be obvious to all concerned. You are ready to draw your materials from MLO using NAVSUP form 1250-1s. One important thing to remember while deployed is to only keep 10 working days worth of materials on the jobsite. Your 2-week windows are a good tool to use here.

Procuring Local Materials

Materials bought locally require special attention and a little foresight. Countries using the metric system often provide materials incompatible with ours, especially with pipe thread and diameter. A good turnover with the previous battalion will help identify and avoid some of the pitfalls associated with locally procured materials.

Requisitioning Materials from MLO

All material is requisitioned from MLO on a 1250-1. Your company will give MLO a list of people authorized to requisition and receive material. Your name must be on the list authorizing you to requisition material. The only rule MLO has is that the same person cannot requisition **AND** receive the same material. You must give MLO the 1250-1s in advance so they can process the paper work and pull the material out of storage and stage for pick-up or delivery to your job. Table 3-1 lists the lead times that your material will be available for pick-up after your 1250-1 reaches MLO.

If you requisition material from the CONUS, allow at least 60 days for normal requisitions and 120 days for long lead items. You turn in materials to MLO using a 1250-1 completed in red ink

Storing Material on the Job

Requisition only the materials you will use for the next 2 weeks. Materials required to complete your 2-week windows are a good measure of this. Once materials are on your job you must protect them from pilferage, weather, and jobsite damage. Store them indoors if possible. If materials have to be stored outdoors, keep them off the ground. Lock up high-value

ESTIMATE AT COMPLETION (EAC) REPORT

A	B	C	D	E	F	G	H	I	J
PROJECT NUMBER	PROJECT TITLE	ORIGINAL ESTIMATE WITHIN SCOPE	FUNDS PROVIDED	ACTUAL EXPENDITURE COST	PIPELINE COST	FUTURE FUNDING REQUIRE-MENTS	TOTAL MATERIAL & SERVICES COST (E+F+G)	FUNDING CONTIN-GENCY 0.1(F+G)	ESTIMATE AT COMPLETION (H+I)
GGB-413	ALFA Maint Shp	250,000	275,000	150,000	20,000	70,000	240,000	9,000	249,000
GER-110	Admin Building	500,000	550,000	350,000	44,000	90,000	484,000	13,400	497,400

KEY:

1. **Original Estimate within Scope** - NCR s determine with input from the battalions based on your project planning.
2. **Funds provided** - The amount of money 3 NCB/2 NCB gave you to purchase materials locally.
3. **Actual Expenditure Cost** - Cost of materials MLO received and paid for.
4. **Pipeline Cost** - Cost of materials MLO received but have not paid for. The check hasn't cleared yet.
5. **Future Funding Requirements** - Materials you will need in the future but do not have.
6. **Funding Contingency** - 10% of the sum of Pipeline + Future Funding.
7. **Estimate at Completion** - The projected cost of the completed project.

Figure 3-20.-EAC report.

Table 3-1.-Requisition Lead Times

(Available for pick-up in MLO)

Priority	On Shelf Items	Locally Ordered Items	Signature Authorization
A	24 hours	2-3 days	Operations officer
B	48 hours	4 days-2 weeks	Company commander
C	3-5 days	2 weeks plus	Company commander

items that are easily pilfered. With a little prior planning and your 2-week windows, you can have the materials you need, when you need them, and not worry about damage or theft.

Excess and Borrowed Materials

When a job is completed, all remaining materials must be offered to the customer. Materials the customer does not want are stored in MLO for 6 months. This material is listed in the excess file, and you can use any material off it on your project free of charge using a dummy requisition number. MLO routinely publishes this excess list. Screen the excess list before writing an add-on BM. Remember that material is only kept 6 months so look ahead to activities you will complete 3 or 4 months down the road. If you need a particular line item, let MLO know so they do not send it to the Defense Reutilization and Marketing Office (DRMO). The borrow file is a dangerous tool. If you need material on your job and MLO has the identical item waiting for another job, the operations officer can authorize you to use it. Use of this borrowed item is allowed *only if* MLO can replace it before the project's start date.

Material Shelf Life

Most paints, glues, and adhesives have a shelf life. If you order these materials too early, their shelf life may be expired by the time you use them. MLO has a computer to track shelf life and may extend that shelf life depending on the condition of the material. Monitor shelf life, but do not dispose of old materials without first checking quality.

SAMMS

The SAMMS (Seabee Automated Mobile Management System) computer system is a fully automated management system that has a program for MLO. Items the computer tracks that can help you include the following:

* Received materials
* Borrowed material
* Materials due
* Hazardous material
* Excess material
* Shelf life data

Use MLO and these programs to your advantage. One of the handiest reports from the computer is the materials due report. This report provides a list, by project, of all materials ordered but not received. MLO should provide a materials due report for each project every 2 weeks. The Ops meeting is a convenient place for companies to mark up these reports for materials needed. If the companies tell MLO which materials are needed in the next 30, 60, or 90 days, MLO can take appropriate action to ensure the materials are on hand when needed. Supply will help you only if you work closely with them and plan ahead. Your lack of prior planning is not a reason for them to give you a higher priority or better service.

EQUIPMENT MANAGEMENT

As a crew leader you need to be familiar with the proper care and maintenance of the equipment your personnel use. In this section of the chapter we will discuss first echelon maintenance, preventive maintenance, and general requirements as per the COMSECOND/ COMTHIRDNCBINST 11200.1 series.

GENERAL REQUIREMENTS

Every operator of equipment should ensure the following:

1. Equipment is operated according to established procedures and all safety precautions are rigidly observed.

2. Transportation of passengers is based on authorized trips and for official business only. **Picking up hitchhikers is strictly forbidden!**

3. All construction and material handling equipment is authorized for assigned construction tasks only. Construction equipment is not to be used for transporting personnel.

The number of persons on any piece of operating construction equipment will not exceed the number of seats.

4. Personnel assigned to operate automotive, construction, or material handling equipment must be qualified and licensed.

5. Equipment is made available for preventive maintenance service as scheduled by the maintenance branch.

6. Personnel operating automotive, construction, or material handling equipment perform operator maintenance as scheduled.

7. Personnel are familiar with current published battalion policies for the use of CESE (civil engineering support equipment) for recreational purposes.

8. Equipment is not to be used to store tools, materials, or personal gear.

FIRST ECHELON MAINTENANCE

Proper maintenance is the responsibility of the operator. Each operator must perform daily maintenance and keep the assigned vehicle and/or equipment clean, safe, and in serviceable condition. An operator must inspect equipment daily and note any defects. Defects noted must be corrected before a serious breakdown or mishap occurs. Many units of equipment have hourly and daily lubrication points. This lubrication is the responsibility of the operator. Supervisors must ensure that equipment is maintained as outlined in the operator's manual.

Operators are responsible for the prestart inspection. This inspection consists of performing the services listed on the operator's Inspection Guide and Trouble Report, NAVFAC 9-11240/13 (hard card), or the operator's Daily PM Report, NAVFAC 11260/4, as appropriate. This inspection basically covers inspection of fuel, oil, water, hydraulic fluid, and battery levels. And it includes inspections of tires, lug nuts, lights, safety devices, drive belts, and cargo and mounting equipment. The prestart inspection also covers leaks, exterior or interior damage, and any required lubrication. Do not operate or allow crew members to operate defective or unsafe equipment. Note the discrepancies on the hard card/daily PM report and forward them immediately to the dispatcher.

The operator must use his/her senses to detect items needing attention. Each sense (smell = burning rubber, grease, or clutches; hearing = unusual noises; sight = instruments; and feeling = drag, pull, or vibration) signals information. Tires should be inspected periodically for flats and rocks. If you suspect a defect, stop the equipment and investigate. Before returning equipment to use be sure that defects that could damage the equipment or impair safe operation are repaired.

After completing operation, each operator must perform the established shutdown procedures (as prescribed in the appropriate operator's manual) and other directed services. These services usually consist of checking equipment cleanliness (wash and steam clean as appropriate); draining air tanks and covering exhaust stacks; closing doors, windows, and hoods; setting brakes and chocking wheels; blocking dumpbeds for draining; and topping-off fuel tanks. Supervisors need to be sure that the equipment is protected against the weather and that the hard card/daily PM report is completed and returned to the dispatcher.

PREVENTIVE MAINTENANCE

Preventive maintenance is scheduled maintenance that has as its prime objectives maximizing equipment availability and minimizing unnecessary repair cost. Preventive maintenance consists of safety and serviceability inspections, lubrication and minor services, and adjustments beyond those of operator maintenance.

The "standard" interval between PM service inspections for NCF equipment is 40 working days. It is the maintenance supervisor who determines if the PM interval for an item of equipment should be reduced. You must **never** extend the interval between PM service inspections beyond the prescribed 40 working days for active CESE.

SCHEDULING AN EXCAVATION

Coordinating equipment requirements between several companies and many projects takes good communications. ALFA company tracks their workload based on original schedules and weekly goals. If the crew leader can see an activity requiring ALFA company support is going to slip, the crew leader must contact the chain of command immediately. The chain of command needs to know if a crew is not going to be ready and when to reschedule an excavation. Getting clearances for an excavation (digging permits) are the responsibility of the crew leader. These permits will become part of the project package. Figure 3-21 is a form for requesting clearance from public works.

JOBSITE MANAGEMENT

The rest of this chapter will cover ways to help you organize your construction site. Jobsite management includes material, tools, jobsite appearance, visitors, field offices, initial setups, and inspections.

Date:

From: Naval Mobile Construction Battalion
To: Public Works Officer

Subj: EXCAVATION REQUEST

1. Request clearance to excavate for the purpose of (describe excavation):

2. Method of excavation:

3. Planned start date:

4. Planned completion date(including backfill, compaction, ground cover, paving repair, etc.):

5. The excavation is for project _____ and is required to: _____

_____

6. Point of contact: _____ phone no. _____

7. Sketch showing location of planned excavation is attached (mandatory).

_____
Signature/printed name of requestor

INTERNAL PUBLIC WORKS ROUTING

Code	Work Center	Approve/ Disapprove	Signature	Date	Phone	Remarks
____	Line Crew	_____	_____	____	_____	
____	Water Crew	_____	_____	____	_____	
____	Engineering	_____	_____	____	_____	
____	_____	_____	_____	____	_____	

PUBLIC WORKS DEPARTMENT ENDORSEMENT

From: Public Works Department
To: Naval Mobile Construction Battalion

1. Returned APPROVED/DISAPPROVED

_____
Signature/printed name of approving official

Fig. 3-21.-Excavation request.

MATERIAL

Of the many things to look at when setting up a construction site, material is just one of them. Depending on the project, you may need to answer the following questions:

- How big is the area for storing material on site?
- Can the material be secured?
- Is the material exposed to the weather?
- Does all the material have to be on site?
- Is the material stored properly?
- Are there MSDSs on all required material?
- Is the material the right material?

You should not store more than 2 weeks of material on the job. If you do not need it now, do not draw it now! If you must build a material storage area, try and make it in an area that is not going to be in the way of construction.

TOOLS

Tool accountability is one item you as a crew leader must control. The simplest way to be sure you have all the tools you signed for is through tool kit inventories and subcustody cards. Twice monthly tool kit inventories are required by the Seabee Supply Manual with the exception of some large kits. Inventory schedules are listed in an appendix of the Seabee Supply Manual. A kit inventory list will be provided by CTR for each kit you have checked out. During each inventory, you count each item and check the quantity on hand versus the quantity on the inventory list. You indicate the shortages for each item and determine a dollar amount for all items not accounted for. Along with accountability, service-ability is also important. You have to ensure all electrical tools are safety checked each month and the right color tape is placed on the cord. All power tools whether gas or air operated must also be checked. Be sure to remove any defective tools from service. Provide safety protection equipment for any tool that requires such. Tools must be kept clean and organized. To prevent theft, secure all tools at the end of each work day. Remember, you are the one responsible for the tools.

JOBSITE APPEARANCE

The first thing anyone notices about your jobsite is the general appearance. You can be doing high-quality work but if your jobsite looks bad that is the only thing people are going to remember. Have the crew members pick up after themselves during the workday and conduct a final cleanup at the end of each day. A clean jobsite is a safe jobsite.

VISITORS

One of the most important impressions made upon command visitors is the one made by the crew leaders when presenting the job. Remember your military bearing and speak positively. Be professional; first impressions are lasting impressions. Describe the project in general, including the type of construction and finishes. Mention specific safety measures taken regarding any hazards present. Explain the project schedule to the visitor(s) by using the level III barchart. If you are behind schedule, explain how you are going to catch up. You want each visitor to leave with an impression that you know what you are doing. Do not try to bluff your way through. If asked questions you cannot answer, ask the visitors if you can get back to them with the answers later. Then be sure you do. Remember that visitors often carry an impression, good or bad, back to higher headquarters.

FIELD OFFICES

The field office may be an equipment shelter or appropriate structure separate from tool and material storage. Any material used to construct the field office shall be waste material, material from MLO excess, or material listed for office construction on the project BM. The following list of required field office items is updated daily and is available to the chain of command and project crew:

*1. Level III bar chart
*2. Safety plan/EM385 1-1
*3. Quality control plan
*4. Construction activity summary sheets
*5. Weekly goals
*6. Daily safety topics
*7. Emergency telephone numbers
*8. Crew Organization/chain of command
9. Complete project package
10. Clean working drawings (with changes marked in red pencil and construction notes in blue)
11. Construction crew location chart
12. Material status

The eight items marked with an asterisk(*) must be posted on the jobsite information board as in figure 3-22.

POSTED JOBSITE INFORMATION

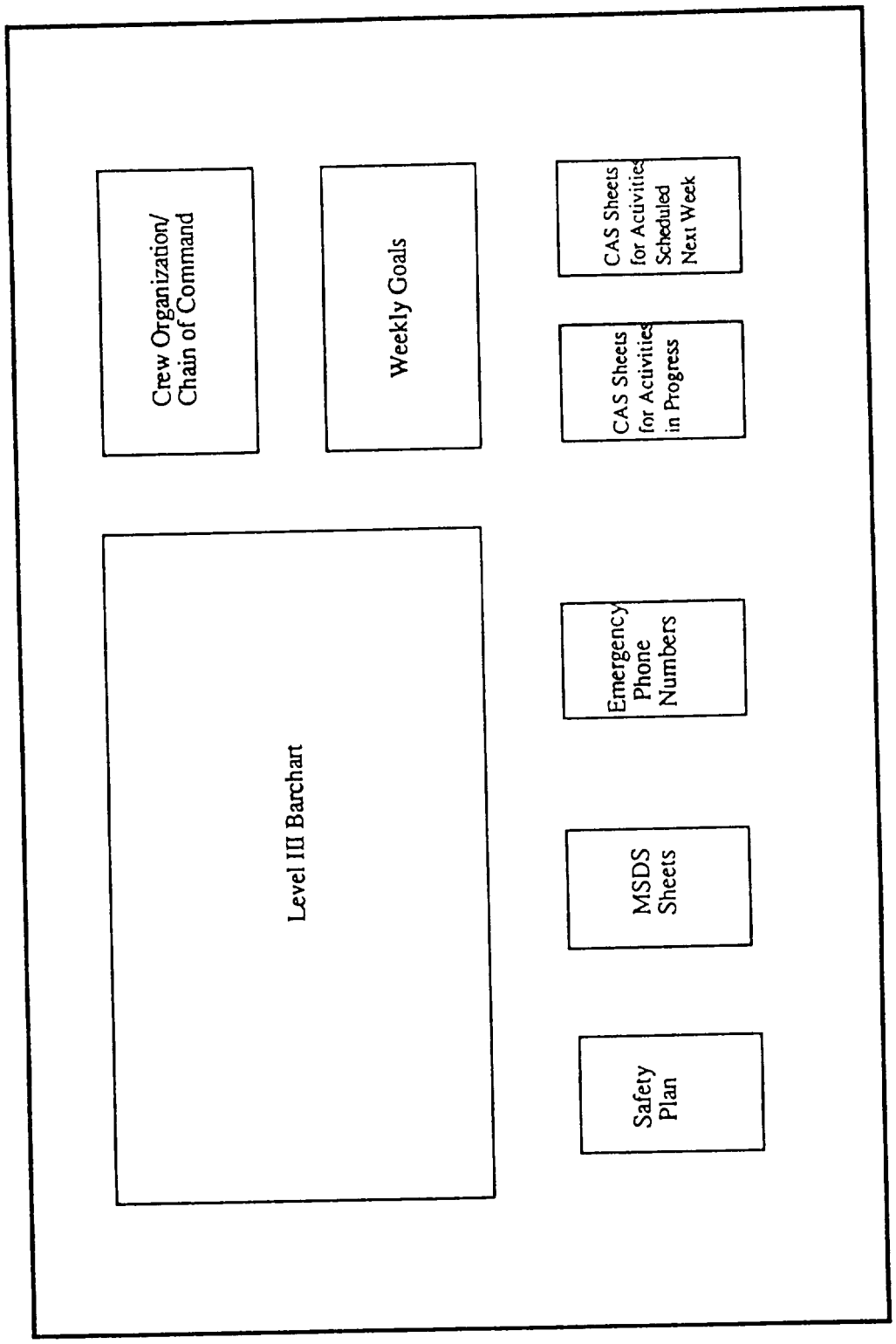

Figure 3-22.—Posted Jobsite information.

INITIAL SETUP

You must consider many things when setting up your jobsite. Such problems as access, haul roads, head facilities, potable water, project sign, parking for heavy equipment, safety requirements, and power supply must all be solved. The following objectives checklist (fig. 3-23) is a valuable tool for laying out a project site.

SITE LAYOUT OBJECTIVES CHECKLIST

A. Economy of operation and minimum resource waste
   1. Less crew
   2. Less equipment
   3. Less material waste
   4. Less time
   5. Less management
   6. Less money

B. Importance of effective site organization
   1. Raises both individual and overall Seabee team productivity.
   2. Maximizes productive time and reduces handling, transporting, and waiting time caused by workflow interferences.
   3. Saves total project man-days.
   4. Enables more timely project completion.
   5. Reduces equipment usage and callbacks.
   6. Produces less loss, pilferage, damage, and deterioration of staged materials.
   7. Produces less wear and tear on finished and installed work surfaces.
   8. Creates safer work environments.
   9. Improves security against enemy action.
   10. Reduces supervisor's time spent on minute production decisions, freeing up time for more significant tasks.
   11. Leaves better impression on visitors/chain of command.

C. Specific objectives
   1. Increase unimpeded workflow.
   2. Create shortest, simplest transport paths.
   3. Safeguard project resources.
   4. Ease the receiving, inventorying, and staging of materials, parts, and equipment.
   5. Optimize the crew leader's ability to monitor and control work site operations.
      a. Visibility of work and staging areas
      b. Ease of access to work and materials
      c. Ease of inspection of work and materials (task checks, verifying work-in-place)
   6. Maintain operational flexibility as the work progresses from rough and heavy trades to finishing trades.
   7. Cope with site constraints:
      a. Dust, temperature, wind, sun, rain, humidity, and so on
      b. Terrain, surface, and subsurface conditions
      c. Scope and class of work
      d. Other interferences and operations

Figure 3-23.—Site layout objectives checklist.

Besides the layout objectives checklist to help keep the overall goals in mind, a site organization checklist (fig. 3-24) can help with speifics. Many of the details of traffic, prefabrication, material and equipment, roads, utilities, safety, and defense are easier to handle with a checklist.

SITE ORGANIZATION CHECKLIST

A. Job work and traffic flows (congestion)
   1. Exterior access to site
   2. Interior traffic and cross traffic
   3. Material bottlenecks
   4. Work access bottlenecks
   5. Trades and processes working through other trades
   6. Analysis of work sequences
   7. Movements of both temporary and installed materials from staging area and delivery yards to installation points
   8. Methods used by each trade for:
      a. Delivery of materials - erection of materials
      b. Use of scaffolds, hoists, elevators
      c. Work areas required for proper usage of mobile equipment
   9. Benefits or hindrances caused by growing mass of installed work
   10. Priority of continuous flow (shorter) paths over occasional flow paths
   11. Closer location priority for heavier, bulkier, less delicate components over lighter, less bulky, more delicate items
   12. Equipment access to all working points and adequate work bay maneuvering room

B. Yard spaces and areas for component prefabrication
   1. Temporary structures and assemblies
      a. Concrete forms
      b. Scaffolds
      c. Hoists
      d. Lagging, shoring, braces, and so on
      e. Saw tables and jigs
      f. Pine fabrication tables and jigs
   2. Installed assemblies
      a. Rebar
      b. Embedded items
      c. Piping and plumbing
      d. Lumber framing
      e. Steel framing
      f. Sheet and miscellaneous metals
      g. Electrical duct, panels, and wire harnesses
      h. Masonry
      i. Tile
      j. Cabinetry and finish carpentry
      k. Pile driving
      l. Dewatering
      m. Instrumentation
      n. Precast framing, lintels, walls, and slabs

Figure 3-24.—Site organization checklist.

SITE ORGANIZATION CHECKLIST

C. Materials staging and storage
   1. Planned concurrent with job traffic and workflow analysis and location of yard work plants and spaces.
   2. Assigned delivery points for inspection receiving and counting.
   3. Stored by trade in separated areas.
   4. Stockpiled by arrangements:
      a. First-used, last-used material locations
      b. Palletized, stacked, sheltered, and raised off ground
      c. Drainage
      d. Unpacking and assembly space
      e. Aisle and loader access
      f. Storage space (particularly for pipe, steel, rebar, joists, electric duct, poles, and standards)
      g. Space for phased delivery of perishable or long lead-time materials
   5. Protection against:
      a. Environmental deterioration
      b. Handling and transporting
      c. Theft, losses, and shrinkages
   6. Box trailers for small and valuable parts
   7. Ground treatment, platforms, corduroying mats, and so on, for heavy loads on soft ground
   8. Aggregate stockpiles

D. Equipment and field maintenance sites
   1. Parking
   2. Maintenance pads, shops, and shelters
   3. FOG/POL storage
   4. Fueling stations
   5. Parts van and box trailers
   6. Tires
   7. Attachments
   8. Lowboys
   9. Loading/unloading ramps
   10. Dust control
   11. Batch and mix plants
      a. Compressed air
      b. Water
      c. Power
      d. Foundations
      e. Bias, stockpiles, and surge piles
      f. Loading, scalping, screening, crushing, conveying, washing, stockpiling, reloading, and hauling
      g. Cooling or heating aggregates
      h. Methods of delivery and placing
      i. Proximity to aggregate sources and jobsite

Figure 3-24.—Site organization checklist—Continued.

SITE ORGANIZATION CHECKLIST

E. Haul roads and pits
   1. Haul economy
      a. Elevation (minimum climb, level) - length (minimum haul time)
      b. Grades (minimum shift downs) - surface (rolling resistance)
   2. Haul maintenance
      a. Temporary drainage
      b. Haul road maintenance

F. Temporary utilities
   1. Electric power distribution points and lighting
   2. Water points and water storage
   3. Potable water
   4. Sanitary toilets
   5. Temporary storm drainage
   6. Fire lines
   7. Fuel
   8. Office space
   9. Employee bulletin boards
   10. Guard shack

G. Security and safety
   1. Gates, fences, and locked storage
   2. Barricades and safety lights
   3. Guard
      a. Shack
      b. Telephone
      c. Security lighting

H. People
   1. Personnel report-in procedure
   2. Safety and administrative instructions
   3. Parking
   4. Visitors
   5. OICC/ROICC office
   6. First aid

I. Military defense
   1. Fire lines
   2. Weapons positions
   3. Perimeter trenches and foxholes
   4. Secondary defense and final fires
   5. Ammunition storage and supply
   6. Wire, booby traps, obstacles, and concealment

Figure 3-24.—Site organization checklist—Continued.

INSPECTIONS

The two biggest inspections for crew leaders are operational readiness inspections (ORIs) under the 3rdNCB and departmental management inspections (DMIs) under the 2ndNCB. Figure 3-25 is a jobsite inspection checklist. This will assist you in preparing for these inspections.

JOBSITE INSPECTION CHECKLIST

Safety items

_____ Clean drinking water with plenty of cups
_____ EM 385 present on jobsite
_____ Power tagged with safety color of the month
_____ Power sources tagged reflecting re-certification within the last month
_____ Fire extinguishers staged and checked within the last month
_____ Welders or light plants not used as power source
_____ GFI's/spider boxes in use
_____ All rebar is capped
_____ Scaffolding has handrails, toeboards and bracing
_____ Project site roped off
_____ All vehicles have wheels chocked

Housekeeping

_____ Jobsite should be spotless for inspection
_____ Conex boxes and kits neat and orderly
_____ Vehicles clean and pre-started
_____ Excess material removed from the jobsite
_____ Professional project sign with current info

Crew members

_____ Must know who the project safety petty officer is
_____ Must know the safety color of the month
_____ Must ear hard hats at all times
_____ Must know who the QC inspector is
_____ Must know the information on the CAS sheets for the next several activities
_____ If current project will be finished before end of deployment, they must know where they are going when the project is done
_____ Must know timekeeping procedures
_____ Unit integrity should be maintained to the maximum extent possible. Military organization = construction organization = berthing arrangements
_____ Strict adherence to daily routine
_____ Assistant crew leader designated

Project Management

_____ Barcharts and CAS sheets reflect actual status
_____ Project package is complete and in use by the crew leader
_____ As-built (redline) drawings up to date and on project
_____ BM reflects accurate material status
_____ Kit inventories up to date and inventories maintained on the jobsite
_____ Project log is up to date

Fig. 3-25.—Jobsite inspection checklist.